

## ABSTRACT

[0054] A nonlinear adaptive mechanism for amplitude adjustment and DC estimation and compensation for use in a digital receiver such as a Bluetooth GFSK receiver. The mechanism uses a feed-forward technique that can be used in a multi-stage scheme to perform both DC compensation and amplitude adjustment of an input signal for use by subsequent processing stages. In a first stage, coarse DC offset compensation is performed and the offset estimates generated are subsequently frozen. In a second stage, the incoming signal with the DC offset subtracted from it, is then scaled into a narrow predefined range of amplitudes using a scaling mechanism that works with gains and attenuations that are powers of two in order to simplify implementation. In a third stage, the scaled compensated signal is then injected again into the same DC estimation mechanism, which was previously used for DC compensation in the first stage, for further DC offset estimation and compensation (i.e. fine DC estimation and compensation).